effect, and the cords include a plurality of belt layers which are inclined in a circumferential direction of the tire. Rigidity of the carcass layer is large in the radial direction of the tire , but relatively small in the circumferential direction while the rigidity of the belt layer is large in the circumferential direction of the tire, but relatively small in the radial direction. --

a2

Please replace the paragraph beginning at page 2, line 1, with the following rewritten paragraph:

a3

-- Therefore, a local stress can be generated in a belt end in the vicinity of a boundary between the carcass layer and the belt layer, which lowers durability of the tire. When the vehicle corners, it is known that a reaction force is abruptly reduced if the vehicle reaches a slip limit, and it is not possible to drive the vehicle in some cases. --

Please replace the paragraph beginning at page 1, line 8, with the following rewritten paragraph:

a4

-- On the other hand, in the case of bias tires, which existed prior to the manufacture of radial tires, rigidity of the tread is insufficient and has no cornering reaction force and, thus, motion is inferior. Further, it is known that shearing distortion is generated in the tire side wall due to flexing wherein the cords intersect each other, and that portion is prone to become fatigued and destroyed. --

Please replace the paragraph beginning at page 4, line 22, with the following rewritten paragraph:

a5

-- If the radius of curvature of the bent portion becomes small, there is a problem that a great shearing force is generated between the layers of the upper layer bent portion and the lower layer bent portion of the carcass layer of the double layered structure and thus, the bent portion is prone to be fatigued and may be destroyed. Further, since the bent portion is discontinuously changed in cord angle, there are problems that predictability of the slip limit at the time of cornering is low and improvement in safety is small like the radial tire. --

Please replace the paragraph beginning at page 6, line 2, with the following rewritten paragraph:

a6

-- It is an object of the present invention to provide a carcass ply producing apparatus and a carcass ply producing method wherein the disposition angle of a ply cord can be changed halfway along its widthwise direction at a predetermined bending angle. --

Please replace the paragraph beginning at page 6, line 7, with the following rewritten paragraph:

a7

-- It is another object of the invention to provide a pneumatic tire capable of keeping a predetermined shape in a tire having flattening of 70% or less, and capable of enhancing the predictability of cornering to improve safety, and having durability higher than that of a conventional tire. --

Please replace the paragraph beginning at page 6, line 13, with the following rewritten paragraph:

a8

-- To achieve the above objects, the present invention provides a carcass ply producing apparatus for producing a carcass ply layer of a tire comprising a supply head for supplying one or a plurality of ply cords, a head driving mechanism for reciprocating the supply head along a widthwise direction of the carcass ply, a sticking body having a sticking surface to which the ply cord supplied by the supply head is stuck, a sticking body driving mechanism for moving the sticking surface of the sticking body along a longitudinal direction of the carcass ply, and a moving amount controlling mechanism capable of controlling a moving amount of the sticking surface with respect to a moving amount of the supply head, wherein when the ply cord is supplied along the widthwise direction of the carcass ply, a disposition angle of the ply cord with respect to the longitudinal direction can be changed. --

Please replace the paragraph beginning at page 7, line 5, with the following rewritten paragraph:

a9

-- Working effects of the carcass ply producing apparatus having the above structure is as follows:

(1) One or a plurality of ply cords are supplied to a sticking surface of a sticking body by a supply head.

(2) The supply head reciprocates along a widthwise direction of the carcass ply, which corresponds to the meridional direction of the tire.

(3) The sticking surface can move along the longitudinal direction of the carcass ply, which corresponds to the circumferential direction of the tire.

(4) A moving amount of the sticking surface can be controlled with respect to the supply head. --

Please replace the paragraph beginning at page 9, line 3, with the following rewritten paragraph:

a10

-- To achieve the above objects of the present invention, there is provided a carcass ply producing method for producing a carcass ply layer of a tire comprising --

Please replace the paragraph beginning at page 10, line 1, with the following rewritten paragraph:

a11

-- The present invention also provides a pneumatic tire having two or more carcass layers for reinforcing between a pair of annular beads, and a reinforcing layer having a cord arranged on an outer peripheral surface of the carcass layer below a tread surface in a circumferential direction of a tire, and a flattening of the pneumatic tire being 70% or less, wherein the cord constituting the carcass layers are arranged substantially in a radial direction in a region of the tire from the bead to a position near a tire maximum width, and from that position to a grounding end, an angle with respect to a circumferential direction of the tire is gradually changed, and the angle is 20 to 60° with respect to the circumferential direction of the tire in the vicinity of the grounding end, and the angle is 20 to 50° at the tread surface. The carcass layers are laminated at an angle substantially symmetrical with respect to a tire equator line and a tensile modulus per unit width of the reinforcing layer is 1.2 times or more of the carcass layers. --

Please replace the paragraph beginning at page 10, line 19, with the following rewritten paragraph:

a12

-- Here, the tread surface is a range of inner side of grounding end of each of opposite sides of the tire. A criterion of the tensile modulus per unit width of the reinforcing layer is the entire width of the reinforcing layer, and a criterion of the tensile modulus per unit width of the carcass layer is the tread surface, apparent Young's modulus of the cord is measured in accordance with initial tensile resistance of JIS L-1017 chemical textile tire cord testing method, the number of cord strikes per unit width and a value obtained by multiplying the cord area of cross section by the number of layers are defined as the tensile modulus. A criterion of the number of strikes is a cured tire, but the number of strikes when material is prepared can be set from inflate rate at the time of forming. --

Please replace the paragraph beginning at page 11, line 9, with the following rewritten paragraph:

a13

-- According to the pneumatic tire of the invention, the cord angle with respect to the tire circumferential direction from the tire maximum width to the grounding end is gradually changed. Therefore, a reinforcing effect is continuous. Thus, predictability of the cornering is high, and safety is enhanced. There is no bent portion in which the cord angle is changed discontinuously, and since the cord is disposed substantially in the radial direction of the tire from the bead to the tire maximum width, peeling off phenomenon between the two layers is less prone to be generated, and stress is less prone to be concentrated. Further, not only in the tread surface, but also in the outside shoulder portion, the cords intersect at a small angle to enhance the rigidity in the circumferential direction and thus, kinetic ability of cornering is enhanced. Since the tensile modulus per unit width of the reinforcing layer is 1.2 times or more of the carcass layer, a predetermined shape of the tread surface can be obtained even if the flattening is small. Further, the rigidity in the circumferential direction is enhanced by the reinforcing layer, and rigidity in the lateral direction is also enhanced by the carcass layer in which the cords intersect. Therefore, it is possible to enhance both the kinetic ability of cornering and safety. As a result, it is possible to provide a pneumatic tire in which a predetermined shape can be held in a tire having flattening of 70% or less, and the predictability of the cornering and safety are improved and durability is higher than that of the conventional tire. --

Please replace the paragraph beginning at page 12, line 11, with the following rewritten paragraph:

a14

-- In the above structure, it is preferable that the reinforcing layer includes a central portion having a width of 45 to 80% of entire width of the tread surface located at a center of and below the tread surface, and opposite sides having tensile modulus per unit width which is lower than that of the central portion. Here, a criterion of the tensile modulus per unit width of each portion of the reinforcing layer is the entire width of each portion. --

Please replace the paragraph beginning at page 12, line 24, with the following rewritten paragraph:

a15

-- It is preferable that the tensile modulus per unit width of the central portion is 1.2 times or more of a tensile modulus per unit width of the side. --

Please replace the paragraph beginning at page 13, line 16, with the following rewritten paragraph:

a16

-- The working effect of the pneumatic tire of this structure produces various advantages. --

Please replace the paragraph beginning at page 13, line 18, with the following rewritten paragraph:

a17

-- For instance, since the radial region is included in the region including the position near the tire maximum width, riding comfort can be maintained excellently. Further, since the bias region is included on the side of the bead in that region, rigidity of the carcass layer can be enhanced near the bead, steering stability, driving and control abilities can be enhanced. Since the bias region is also included in the tread of the radial region, rigidity of the carcass layer near the shoulder and tread can be enhanced. As a result, merits of the radial tire and bias tire can properly be used finely in each portion of the tire, it is possible to provide a pneumatic tire in which riding comfort can be maintained excellently, the rigidity near the bead and the shoulder can be enhanced, and reinforcing structure in that portion is unnecessary or simplified. --

Please replace the paragraph beginning at page 14, line 20, with the following rewritten paragraph:

a18

-- In the case of this structure, the bias region and the radial region are disposed at preferred positions in this order, the above advantages can be obtained more reliably. --

Please replace the paragraph beginning at page 15, line 3, with the following rewritten paragraph:

a19

-- In the case of this structure, the radial region reinforced by the belt layer exhibits high rigidity in both the circumferential direction and widthwise direction of the tire, and the bias regions on the opposite sides thereof exhibit appropriate rigidity. Thus, the continuity of the rigidity with respect to the radial region near the tire maximum width can be kept. As a result, during the cornering, it is possible to enhance the predictability of the slip limit. --

Please replace the paragraph beginning at page 15, line 17, with the following rewritten paragraph:

a20

-- In this case, the bias region, the radial region, the bias region and the radial region are disposed at preferred positions in this order, the above advantages can be obtained more reliably. --

Please replace the paragraph beginning at page 17, line 1, with the following rewritten paragraph:

a21

-- Preferred embodiments of a carcass ply producing apparatus and a pneumatic tire of the present invention will be explained using the drawings. First, a pneumatic tire constituting a carcass layer produced by the carcass ply producing apparatus will be explained. Fig.1 is a partial sectional view showing a pneumatic tire according to a first embodiment. Fig.2(a) is a front view of partially cut pneumatic tire, and Fig.2(b) is a plan view thereof. --

Please replace the paragraph beginning at page 17, line 16, with the following rewritten paragraph:

a22

-- As used herein, the term flattening is expressed as a percentage and is obtained by dividing a height H of cross section of the tire by a tire maximum width W. The flattening in the present invention is 70% or less. As the flattening is reduced to 65% or less or 60% or less, the present invention having the above effects becomes more effective. That is, it is possible to enhance the prediction of the cornering to improve the safety, and to enhance the cornering performance by flattening the tire. --

Please replace the paragraph beginning at page 19, line 10, with the following rewritten paragraph:

a23

-- A reinforcing layer 6 comprises cords that are arranged in a tire circumferential direction (i.e., direction which is parallel to the tire equator line CL). The reinforcing layer 6 is disposed at a position below the tread surface Tr of the outer peripheral surface of the outermost carcass layer 5b. It is unnecessary that the reinforcing layer 6 coincides with a width of the tread surface Tr, and usually has a width in a range exceeding a width of the tread surface Tr. More specifically, it is preferable that the width of the reinforcing layer 6 be 1.0 to 1.3 times of the width of the tread surface Tr. --

Please replace the paragraph beginning at page 19, line 20, with the following rewritten paragraph:

a24

-- Tensile modulus per entire width of the reinforcing layer 6 is 1.2 times or more of tensile modulus (sum of all the layers) of the carcass layer 5 of the treat Tr, and is preferably 1.5 to 6 times. If the tensile modulus exceeds 6 times, the tire is inferior in terms of processing aspect or producing aspect. The tensile modulus per unit width of the reinforcing

a24

layer 6 can be adjusted by the number of strike of the cord, the cord thickness and material of the cord, and processing condition of the fiber. The same is applied to the carcass layer 5 also. --

Please replace the paragraph beginning at page 20, line 5, with the following rewritten paragraph:

a25

-- Examples of cord material constituting the carcass layer 5 include organic fibers such as polyester, polyamide and polyaramide or steel and the like. Examples of cord material constituting the reinforcing layer 6 also include organic fiber such as polyester, polyamide and polyaramide or steel and the like. In the present invention, since it is unnecessary to provide a plurality of belt layers unlike the conventional radial tire, weight of the tire can be lowered. Further, since the reinforcing layer 6 reinforces the biased carcass layer 5, bending rigidity of that portion is enhanced and thus, the cord of the reinforcing layer 6 can be constituted by an organic fiber to further reduce the weight. It is possible to enhance both the cornering performance and safety. --

Please replace the paragraph beginning at page 20, line 18, with the following rewritten paragraph:

a26

-- Preferably, the reinforcing layer 6 is provided at its central position below the tread surface Tr with a central portion 6a disposed in a range Tc of 45 to 80% of the entire width of the tread surface Tr, and opposite side portions 6b having lower tensile modulus per unit width of the central portion 6a. In this embodiment the number of strikes of the central portion 6a is greater than that of the side portions 6b. The reinforcing layer 6 is usually formed in such a manner that after shaping, a ribbon-like reinforcing layer comprising one or small number of cords are spirally wound so as to remove cut portions of the cords. It is possible to increase the number of strikes of the central portion 6a by changing the winding pitch. --

Please replace the paragraph beginning at page 21, line 6, with the following rewritten paragraph:

a27

-- In the present invention, it is preferable that the tensile modulus per unit width of the central portion 6a is 1.2 time or more of the tensile modulus per unit width of the side portion 6b. More preferably, the tensile modules per unit width of a portion from a center

(position on the tire equator line CL) of the reinforcing layer 6 to the opposite ends is gradually reduced. This can be done also by gradually increasing the winding pitch. --

a27

Please replace the paragraph beginning at page 22, line 1, with the following rewritten paragraph:

a28

-- (1) In the first embodiment, two carcass layers are provided. The number of the layers may be even number such as four. In such a case, it is preferable that the pair of carcass layers are laminated such that the cords are disposed at substantially symmetrical angle with respect to a tire equator line, and the cords of the carcass layers laminated in the same direction are disposed in the same direction at their positions. --

Please replace the paragraph beginning at page 22, line 9, with the following rewritten paragraph:

a29

-- (2) In the first embodiment, one reinforcing layer in the circumferential direction is provided, and the tensile modulus per unit width is enhanced by changing the number of strikes at the central portion. Alternatively, the tensile modulus per unit width may be enhanced by providing two reinforcing layers of central portion. Two or more reinforcing layers may be provided. --

Please replace the paragraph beginning at page 22, line 17, with the following rewritten paragraph:

a30

-- As shown in Figs.4 and 5, a pneumatic tire of the second embodiment includes two or more carcass layers 5 for reinforcing between a pair of annular beads 1a. In this embodiment, the carcass layer 5 comprises an upper layer 5b and a lower layer 5a. In this invention, a region in which an angle θs formed between a cord constituting the carcass layer and a tire circumferential direction PD is 90±10° is defined as a radial region RR, and a region in which the cords of the upper and lower layers intersect with each other when the angle θs ("cord angle" in some cases hereinafter) between the cord and the tire circumferential direction PD is 10 to 60° (absolute value) is defined as a bias region BR. The cord angle θs of each of the upper and lower layers may be slightly varied at the intersection. --

Please replace the paragraph beginning at page 24, line 21, with the following rewritten paragraph:

A31 -- The belt layer 6 may comprise any of material used for conventional belt layer 6 such as steel or organic fiber including polyester. The cord material constituting the fiber reinforcing layer may comprise an organic fiber such as polyester, polyamide and polyaramide. --

Please replace the paragraph beginning at page 25, line 14, with the following rewritten paragraph:

A32 -- The lower carcass layer 5a and the upper carcass layer 5b are laminated such that cords are disposed substantially symmetrically with respect to the tire equator line CL. The cord constituting the carcass layer 5 may comprise an organic fiber such as polyester, polyamide and polyaramide or steel and the like. --

Please replace the paragraph beginning at page 26, line 9, with the following rewritten paragraph:

A33 -- As mentioned above herein, the flattening in the present invention is 70% or less. As the flattening is reduced to 65% or less or 60% or less, it is possible to enhance the prediction of the cornering to improve the safety, and to enhance the cornering performance by flattening the tire. --

Please replace the paragraph beginning at page 27, line 13, with the following rewritten paragraph:

A34 -- In the above case, it is preferable that the belt layer is not provided on the outer peripheral surface of the bias region of the tread, and a reinforcing layer in which the cord is arranged in the tire circumferential direction is provided. It is preferable that this reinforcing layer has tensile modulus per unit width of 1.2 time or more of that of the carcass layer. The reinforcing layer preferably includes a central portion disposed in a range of 45 to 80% of the entire tread surface in a central position below the tread surface, and opposite sides having tensile modulus per unit width lower than that of the central portion. The tensile modulus per unit width of the central portion is preferably 1.2 times or more of the tensile modulus per unit width of the side. --

Please replace the paragraph beginning at page 28, line 2, with the following rewritten paragraph:

A35 -- Here, the tread surface includes the inner side of grounding end on opposite sides of the tire. A criterion of the tensile modulus per unit width of the reinforcing layer is the

entire width of the reinforcing layer, and a criterion of the tensile modulus per unit width of the carcass layer is the tread surface, apparent Young's modulus of the cord is measured in accordance with initial tensile resistance of JIS L-1017 chemical textile tire cord testing method, the number of cord strikes per unit width and a value obtained by multiplying the cord area of cross section by the number of layers are defined as the tensile modulus. A criterion of the number of strikes is a cured tire, but the number of strikes when material is prepared can be set from inflate rate at the time of forming. --

a35

Please replace the paragraph beginning at page 28, line 20, with the following rewritten paragraph:

-- Figs.7A to 7B show a line symmetric arrangement with respect to the tire equator line CL. Figs.7C to 7D show a symmetric arrangement with respect to a point at the intersection between the cord and the tire equator line CL. In the above modification (1), for example, a carcass ply having cord arrangement shown in Fig.7(d) can be used. --

a36

Please replace the paragraph beginning at page 31, line 13, with the following rewritten paragraph:

-- The supply head 19 includes a first head section 191 and a second head section 192. The first head section 191 includes supply rollers 191a, 191b and a pressure roller 191c. Similarly, the second head section 192 includes supply rollers 192a, 192b and a pressure roller 192c. Although Fig.10 shows only the side of the second head section 192, the rollers 192a, 192b, 192c are supported on a first supporting body 193 by a bearing 197 and a bolt 196. The first supporting body 193 is fixed to a second supporting body 194 by means of bolts 198. The second supporting body 194 can be driven vertically by a cylinder 195. The first head section 191 also has the same structure. A mechanism for vertically moving the second supporting body 194 may employ a motor or cam. --

a37

Please replace the paragraph beginning at page 32, line 1, with the following rewritten paragraph:

-- In Fig.9, the cord 10a is supplied from above and travels downward. The cord 10a is sandwiched between the supply rollers 191a and 192a and the pressure rollers 191b and 192b and supplied, and stuck to the sticking surface of the tray 17 by the pressure rollers 191b and 192b. In Fig.9, the supply head 19 is moving from left side to the right side. In this case, the cord 10a is pushed by the pressure rollers 191b and 191c on the side of the first

a38

a38

head section 191, and the second head section 192 floats up from the sticking surface slightly. On the other hand, when the supply head 19 moves from the right side to the left wide, the cord 10a is pushed by the pressure rollers 192b and 192c on the side of the second head section 192. --

Please replace the paragraph beginning at page 34, line 6, with the following rewritten paragraph:

a39

-- If a carcass ply corresponding to one tire is produced on the tray 17, the cord 10a is cut, a new tray 17 is placed, the same operations are carried out, thereby producing a next carcass ply. By repeating this procedure, the necessary number of carcass plies are produced. The carcass plies produced on the tray 17 are supplied to a forming machine one by one, thereby producing a tire using a known method. --

Please replace the paragraph beginning at page 34, line 13, with the following rewritten paragraph:

a40

-- The reinforcing layer 6 is preferably formed by spirally winding one or a small number of cords around the shaped object. Using the cord covered with rubber as in the above manner, the guide of the cord is moved in the widthwise direction while rotating the shaped object, thereby spirally winding the cord. By changing the moving speed of the guide at that time, the number of strikes at the widthwise direction can be changed. --

Please replace the paragraph beginning at page 34, line 21, with the following rewritten paragraph:

a41

-- In order to obtain a predetermined tire shape and a predetermined cord angle at each portion, it is preferable to appropriately adjust the cord angle when the carcass plies 8a and 8b are produced. In the case of a bias tire, a relation between a cord angle in the ply state and a cord angle after the tire is formed can be calculated by the following known relational equation (approximate expression), and this relational equation can also be applied in the present invention. If "Ad" is used as variable and "R" of the corresponding portion is determined, "A" can be obtained. --

Please replace the paragraph beginning at page 37, line 3, with the following rewritten paragraph: